What is claimed is:

1. A method of suppressing a periodic disturbance signal component of a communication signal, the disturbance signal component having a known or determinable fundamental frequency, comprising:

generating an estimated disturbance signal component by correlating the communication signal with at least one of a sinusoid that is a function of the fundamental frequency and a cosinusoid that is a function of the fundamental frequency; and

subtracting the estimated disturbance signal component from the communication signal.

2. A method according to claim 1, wherein the step of generating an estimated disturbance signal component comprises correlating the communication signal with a sinusoid that is a function of the fundamental frequency and a cosinusoid that is a function of the fundamental frequency.

3. A method according to claim 1, wherein the step of generating an estimated disturbance signal component comprises correlating the communication signal over a predetermined number of samples, the predetermined number selected such that a sinusoid that is a function of the fundamental frequency has an integer number of periods.

4. A method according to claim 1, wherein the step of generating an estimated disturbance signal component comprises estimating the amplitude and phase of the disturbance signal component at the fundament frequency.

5. A method according to claim 1, wherein the step of generating an estimated disturbance signal component comprises estimating the amplitude and phase of the disturbance signal component at the fundamental frequency, and its harmonic frequencies

in a predetermined frequency range.

6. A method according to claim 4, wherein the predetermined frequency range corresponds to a frequency range audibly detectable by the human ear.

7. A method according to claim 1, wherein the step of generating an estimated disturbance signal component comprises estimating the amplitude and phase of the disturbance signal component at the fundamental frequency, and its harmonic frequencies in a predetermined frequency range, and summing a sinusoidal function of the amplitude and phase of the disturbance signal over a predetermined number of frequency components.

8. A method according to claim 1, further comprising the step of processing the communication signal for transmission.

9. A method according to claim 1, further comprising the steps of:

determining the position of an idle frame in a multiframe structure; and

deactivating the circuitry for subtracting the estimated disturbance signal component during processing of the idle frame.

10. A method according to claim 1, further comprising the steps of:

determining the position of an idle frame in a multiframe structure; and

adding a disturbance signal component into the idle frame.

11. A method of suppressing a periodic disturbance signal component of a communication signal, the disturbance signal component having a known or determinable fundamental frequency, comprising:

(a) calculating a first correlation array between the communication signal and

a sinusoid that is a function of the fundamental frequency;

(b) calculating a second correlation array between the communication signal and a cosinusoid that is a function of the fundamental frequency;

(c) estimating the amplitude and phase of the disturbance signal component at the fundamental frequency and a predetermined number of harmonic frequencies;

(d) calculating the estimated disturbance signal as the sum, over the fundamental frequency and a predetermined number of harmonic frequencies, of a sinusoid that is a function of the fundamental frequency; and

(e) subtracting the estimated disturbance signal from the communication signal.

12. A method according to claim 11, wherein the step of calculating a first correlation array comprises calculating:

$$B_{n,est.} = \frac{2}{K}\sum_{k=1}^{K} y_k \bullet \sin(2\pi(n\frac{f_0}{f_s})k)$$

13. A method according to claim 11, wherein the step of calculating a first correlation array comprises calculating:

$$C_{n,est.} = \frac{2}{K}\sum_{k=1}^{K} y_k \bullet \cos(2\pi(n\frac{f_0}{f_s})k)$$

14. A method according to claim 11, wherein the step of estimating the amplitude of the disturbance signal component comprises calculating, for the fundamental frequency and a predetermined number of harmonic frequencies, the following:

$$A_{n,est} = ((B_{n,est})^2 + (C_{n,est})^2)^{1/2}$$

15. A method according to claim 11, wherein the step of estimating the phase of the disturbance signal component comprises calculating, for the fundamental frequency and a predetermined number of harmonic frequencies, the following:

$$\phi_{n,est} = \mathrm{atan}(C_{n,est} / B_{n,est})$$

16. A method according to claim 11, wherein the step of calculating the estimated disturbance signal comprises calculating:

$$e(k)_{est} = \sum_{n=1}^{15} A_{n,est} \bullet \sin(2\pi (n\frac{f_0}{f_s})k + \phi_{n,est}), \quad k \in [0, K-1]$$

17. A method according to claim 11, further comprising the step of processing the communication signal for transmission.

18. A method according to claim 11, wherein steps (a) through (e) are performed in a remote communication terminal, and further comprising the step of detecting whether the remote terminal is receiving speech input, and wherein steps (a) through (c) are performed only when there is no speech input to the remote terminal.

19. A method according to claim 11, further comprising the steps of:

determining the position of an idle frame in a multiframe structure; and

deactivating the circuitry for subtracting the estimated disturbance signal component during processing of the idle frame.

20. A method according to claim 11, further comprising the steps of:

determining the position of an idle frame in a multiframe structure; and

adding a disturbance signal component into the idle frame.

21. A system for suppressing a periodic disturbance signal component having a fundamental frequency in a communication signal, comprising:

a module for generating an estimated disturbance signal component by correlating the communication signal with a sinusoid that is a function of the fundamental frequency and a cosinusoid that is a function of the fundamental frequency; and

a module for subtracting the estimated disturbance signal from the communication signal.

22. A remote communication terminal, comprising:

a conversion module for converting an analog signal into a communication signal comprising a set of digitized samples;

a processor for receiving the digitized samples from the conversion module and calculating an estimate of a disturbance signal component; and

a module for subtracting the estimated disturbance signal component from the communication signal.

23. A remote communication terminal according to claim 22, further comprising:

a module for formatting the communication for transmission.

24. A remote communication terminal according to claim 22, further comprising:

a module for transmitting the communication signal.